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Office of Environmental Information (OEI) Docket
(Mail Code: 2822T)
Docket EPA-HQ-ORD-2012-0276
U.S. Environmental Protection Agency
1200 Pennsylvania Ave. NW.
Washington, DC 20460

23 July 2012

Dear Administrator Jackson,

The purpose of this letter is to provide public comment in reference to the Federal Register Notice of 25 May 2012 regarding the U.S. Environmental Protection Agency's (EPA) draft document titled, ``An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska'' (EPA-910-R-12-004a-d). This letter is submitted on behalf of Audubon Alaska, the state office of the National Audubon Society. Founded in 1905, Audubon is the oldest conservation organization in the country and is supported by close to half a million members, 470 chapters, and staff in 37 states. About 2,100 Audubon members reside in Alaska. Since our field trips and general meetings are open to the public at no cost, many non-Audubon members also participate in our activities. The National Audubon Society, its members, and its staff rely on Audubon's Alaska Office to represent their interests in the preservation of Alaska's imperiled species and ecosystems, such as those found in and around Bristol Bay.

Our organization appreciates that the EPA has proactively conducted this assessment to determine the significance of Bristol Bay's ecological resources and evaluate the potential impacts of large-scale mining on these resources. The document does an admirable job reviewing, analyzing, and synthesizing information on the potential impacts of large-scale mining development on Bristol Bay fisheries and subsequent effects on the wildlife and Alaska Native cultures of the region (with a primary focus on salmonid fish within the Nushagak River and Kvichak River watersheds). We also applaud the review (Appendix C) by the U.S. Fish and Wildlife Service (USFWS) *Wildlife resources of the Nushagak and Kvichak River watershed*[1].

These documents provide ample scientific justification for being extremely concerned about the potential disastrous ecological consequences that a major open-pit mine, such as the proposed

[1] Brna, Philip J. and Verbrugge, Lori A. (Eds.) 2012. Report to the U.S. Environmental Protection Agency for the Bristol Bay Watershed Assessment. Anchorage Fish and Wildlife Field Office, U.S. Fish and Wildlife Service, Anchorage, Alaska.

Pebble Mine, could have on the biota located within the Nushagak River and Kvichak River watersheds that flow into Bristol Bay. The Executive Summary notes that "Wildlife populations tend to be relatively large in the region, due to the increased biological productivity associated with Pacific salmon runs", yet little is said about the globally significant avian populations found in the coastal and marine waters of the Bristol Bay region. The coastal and marine waters of Bristol Bay are fed by the high numbers of spawning and dead salmon from rivers like the Nushagak and Kvichak, and millions of waterbirds and marine mammals come to feed and fatten on rich beds of mussels, crabs, various small clams, and other soft-bodied invertebrates found in the extensive shallow inter-tidal areas[2] [3].

The disruption of the marine Bristol Bay food web needs to be considered when evaluating the potential impacts of large-scale open-pit mining within the watersheds that flow to Bristol Bay. As we have tragically seen in recent history, tailings at large mines can spill quickly and travel hundreds to thousands of kilometers (e.g. Ajka, Hungary, 2010; Aurul S.A. Mine, Baia Mare, Romania, 2000[4]). In the upper reaches of the Bristol Bay watershed, up to three enormous earthen dam tailings impoundments covering a combined area of 43.7 km^2 could be built (10,807 acres; Figures ES-5 and ES-6 in draft EPA document), which if built, will require perpetual remediation. As noted in Appendix H of the EPA report[5], the Pebble deposit in the Bristol Bay watershed shares many geologic attributes with typical porphyry copper deposits throughout the world, and these deposits can pose geochemical risks to aquatic and terrestrial ecosystems, and to human health. Tailings are likely to have high concentrations of copper, which is among the most toxic of the heavy metals to fish, wildlife, and invertebrates in freshwater and marine systems[6]. If a large tailings dam broke somewhere like at the proposed location of the Pebble Mine, in addition to the Nushagak River and Kvichak River watersheds, toxic waste waters could easily impact avian populations using the estuarine and marine waters of Bristol Bay, specifically by disrupting/destroying the food web that birds rely on that is connected to the nutrient-rich waters that flow down through the Bristol Bay watersheds[7] [8].

Key Areas for Birds in the Bristol Bay Region

There are numerous areas within the Bristol Bay region (see attached Figure) that have been recognized for their special ecological significance, including National Parks, a National

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[2] Schamber, J. L., P. L. Flint, and A. N. Powell. 2010. Patterns of use and distribution of king eiders and black scoters during the annual cycle in northeastern Bristol Bay, Alaska. Marine Biology 157:2169-2176.

[3] Alaska Department of Fish and Game, Wildlife Action Plan, Appendix 4, Marine Invertebrates.

[4] Bacsujlaky, M. 2004. Examples of modern mines that damaged rivers and fisheries. Unpubl. report (http://wman-info.org/resources/technicalreports/MinesRiversFish.pdf).

[5] Appendix H *In* Geologic and Environmental Characteristics of Porphyry Copper Deposits– April 2012

[6] Eisler, R. 1997. Copper hazards to fish, wildlife, and invertebrates: a synoptic review. U.S. Geological Survey, Biological Resources Division, Biological Science Report USGS/BRD/BSR-1997-0002 98 pp.

[7] Chambers, D. et al. 2012. Bristol Bay's wild salmon ecosystems and the Pebble Mine. Report by the Wild Salmon Center and Trout Unlimited.

[8] Wipfli, M. S. & C. V. Baxter. 2010. Linking ecosystems, food webs, and fish production: subsidies in salmonid watersheds. Fisheries 35:373-387.

Monument, National Wildlife Refuges, a State Park, State Protected Areas, federal critical habitat areas, Western Hemispheric Shorebird Reserve Network (WHSRN) sites, a Ramsar Wetland of International Importance, and globally significant Important Bird Areas (IBAs). These sites are summarized below (see also attached Figure 1):

- Two National Parks
  - Katmai National Park
  - Lake Clark National Park

- Four National Wildlife Refuges (NWR)
  - Togiak NWR
  - Izembek NWR
  - Becharof NWR
  - Alaska Peninsula NWR

- One National Monument
  - Aniakchak National Monument and Preserve

- One State Park
  - Wood-Tikchik State Park

- Eight State Protected Areas "to protect their natural features including a wide variety of fish and wildlife habitats" including:
  - Five State Critical Habitat Areas including:
    - Egegik
    - Pilot Point
    - Cinder River
    - Port Heiden
    - Port Moller
  - Two State Game Refuges
    - Izembek
    - Cape Newenham
  - One State Wildlife Sanctuary
    - Walrus Islands

- Three Federal Steller's Eider critical habitat units[9], including
  - Seal Islands
  - Nelson Lagoon
  - Izembek Lagoon

[9] Federal Register Volume 66, Number 23 (Friday, February 2, 2001).

- Two Western Hemispheric Shorebird Reserve Network sites of regional importance (at least 20,000 shorebirds annually or at least 1% of the biogeographic population for a species)[10].
    - Nushagak Bay
    - Kvichak Bay

- As well as at least eight other sites of equal or greater importance to shorebirds that are not yet currently nominated as official WHSRN sites including[11]:
    - Izembek-Moffet Lagoons
    - Nelson Lagoon/Mud Bay
    - Seal Islands
    - Port Heiden
    - Cinder-Hook Lagoons
    - Ugashik Bay
    - Egegik Bay
    - Nanvak Bay

- One Ramsar Wetland of International Importance "recognized by the international community as being of significant value not only for the country, or the countries, in which they are located, but for humanity as a whole."
    - Izembek National Wildlife Refuge

- And 27 globally Important Bird Areas, in recognition of their global importance to bird populations, mainly waterfowl, seabirds and shorebirds[12] [13].
    - Terrestrial IBA:
        - Turquoise Lake
    - Coastal IBAs:
        - Bechevin Bay
        - Cape Senyavin
        - Chagvan Bay
        - Cinder River-Hook Lagoon
        - Egegik Bay
        - Izembek-Moffet Lagoons
        - Kvichak Bay
        - Nanvak Bay
        - Nelson Lagoon-Mud Bay
        - Nushagak Bay
        - Nushagak Bay, marine

[10] http://www.whsrn.org/sites/map-sites/sites-western-hemisphere-shorebird-reserve-network.
[11] Alaska Shorebird Group. 2008. Alaska Shorebird Conservation Plan. Ver. 2, Alaska Shorebird Group, Anchorage.
[12] http://iba.audubon.org/iba/stateIndex.do?state=US-AK.
[13] Smith, M., N. Walker, C. Free, M. Kirchhoff, N. Warnock, A. Weinstein, T. Distler, and I. Stenhouse. 2012. A standardized method for identifying marine Important Bird Areas using colony and at-sea survey data in Alaska. Audubon Alaska, Anchorage.

        - Port Heiden
        - Port Moller-Herendeen Bay
        - Seal Islands
        - Ugashik Bay
    - Pelagic Seabird IBAs:
        - Bering Sea Shelf 163W56N
        - Cinder River Marine
        - Ilnik Marine
        - Izembek Refuge Marine
    - Seabird Colony IBAs:
        - Amak Island Colony
        - Cape Peirce & Cape Newenham Colonies
        - Crooked Island Colony
        - Entrance Point Colony
        - Hegemeister Island Colonies
        - Nelson Lagoon Colonies
        - Round Island Colony

Key Bird Species and Numbers

Bird populations using the terrestrial habitats within the Nushagak River and Kvichak River watersheds are discussed in the draft Assessment[14]. The coastal and marine waters of the Bristol Bay region support millions of birds through the year; they come to stage for migration, to breed, and to winter. In particular, large numbers of seabirds, waterfowl, and shorebirds are attracted to Bristol Bay because of an abundant and reliable benthic invertebrate food resource, which comprises the primary diet of many waterbirds while in marine habitats[15]. In the winter, Bristol Bay waters provide the northernmost ice-free coastal habitat in Alaska. Species for which a large percentage of their population (either globally or for North America) depends on habitat available within the coastal and marine Bristol Bay region include:

Table 1 – Key coastal and marine bird species dependent on the Bristol Bay, AK region.

	Population	Status	Bristol Bay Distribution
Steller's Eider	The total current population estimate is 110,000-125,000 individuals.[16] In Alaska, estimates of birds wintering declined from	IUCN Red List vulnerable species, federally listed as threatened in the U.S., State of Alaska species of special concern, Audubon WatchList	**Most of the world's population molts and winters along the Alaska Peninsula and the Aleutian Islands.** In mid-April 2011,

[14]Appendix C. by the U.S. Fish and Wildlife Service. Wildlife resources of the Nushagak and Kvichak River watershed.

[15] Schamber, J. L., P. L. Flint, and A. N. Powell. 2010. Patterns of use and distribution of king eiders and black scoters during the annual cycle in northeastern Bristol Bay, Alaska. Marine Biology 157:2169-2176.

[16] BirdLife International. 2012. Species factsheet: *Polysticta stelleri.* Downloaded from http://www.birdlife.org on 19/07/2012.

	137,904 in 1992 to 74,369 individuals in 2011[17]. Southwest Alaska[18] High count – 137,904 (May 1992) 1992-2012 mean – 81,925	species, American Bird Conservancy species of highest continental concern. Based on population estimates of birds staging in southwest Alaska, the Alaskan population declined by 2.3% per year since 1992 (or 46% over 20 years), during 1992-2011[19]. Declines in Europe have been even steeper[20].	majority of birds located between Izembek Lagoon and Port Heiden. In inner Bristol Bay, smaller numbers (~1500) of birds between Kulukak Bay to Nanvak Bay. Up to 75,000 Steller's Eiders use 7 globally significant coastal IBAs in the Bristol Bay region: Cape Senyavin, Cinder River-Hook Lagoon, Izembek-Moffet Lagoons, Kvichak Bay, Nelson Lagoon-Mud Bay, Port Heiden, and Port Moller-Herendeen Bay.
King Eider	Global Population: about 790,000 to 930,000 individuals[21]. The western King Eider population (Western Canada and Alaska) is estimated at 470,000 individuals[22] . Southwest Alaska[23] High count – 575,376 (April 2007) 1992-2012 mean – 166,841	Audubon WatchList species	**Most King Eiders using the eastern Bering Sea probably migrate through and/or stage in Bristol Bay** during spring and late fall[24]. In inner Bristol Bay, the largest concentrations of King Eiders are at Kvichak Bay and Nushagak Bay[25], these are key molting areas. King Eiders concentrate closer to shore, in shallower water with lower salinity. During the winter, King Eiders were found in areas with lower ice concentrations. **The inability of eiders to fly away from disturbance during wing molt may make them**

[17] BirdLife International. 2012. Species factsheet: *Polysticta stelleri*. Downloaded from http://www.birdlife.org on 19/07/2012.

[18] Larned, W. W. 2012. Steller's eider spring migration surveys, Southwest Alaska, 2011. United States Fish and Wildlife Service Report, Anchorage, Alaska.

[19] *Ibid*.

[20] *Ibid.* 17.

[21] BirdLife International. 2012. Species factsheet: *Somateria spectabilis*. Downloaded from http://www.birdlife.org on 13/07/2012.

[22] Kirchhoff, M.D. 2010. Audubon Alaska WatchList 2010: Highlighting declining and vulnerable bird species in Alaska. Audubon Alaska, Anchorage.

[23] *Ibid*. 18.

[24] Chris Dau, USFWS, pers. comm.

[25] *Ibid*. 18.

			vulnerable to catastrophic events[26].
Black Scoter	Global Population: about 350,000 to 560,000[27]; Currently, there are believed to be about 200,000 black scoters in the western population, of which about 75% live in Alaska[28] [29]. Southwest Alaska[30] High count – 55,538 (April 2000) 1992-2012 mean – 38,055	IUCN Red List near threatened species, Audubon WatchList species In Alaska, declining by about 3% per year[31].	**Bristol Bay lowlands are second only to the Yukon-Kuskokwim Delta in importance as a breeding area for Black Scoters** (about 25,000 breed in the Bristol Bay area)[32]; Within Bristol Bay, the highest mid-April counts of migrating Black Scoters were from Izembek Lagoon to Port Heiden; in inner Bristol Bay, Kvichak Bay (>5000 birds) was particularly important[33]. Up to 20,000 Black Scoters use 6 globally significant coastal IBAs in the Bristol Bay region: Kvichak Bay, Nelson Lagoon-Mud Bay, Nushagak Bay, Nushagak Bay Marine, Port Heiden, and Port Moller-Herendeen Bay.
Brant (Pacific)	Global Population: about 560,000 individuals in the species[34], of which 147,000 are in the Pacific subspecies, all of which live in Alaska. About 30% winter along the Alaska Peninsula[35]. Southwest Alaska[36]	Audubon WatchList species Of concern due to ~40% reduction in global population; in Alaska the last 18 years of mid-winter population counts indicate a stable population with an average growth rate of 1.01[37]	**Entire Pacific Brant population uses the Izembek Lagoon area** for up to six weeks in fall and for up to four weeks in spring[38]. In mid-April 2011, over 99% (*n* = 68,583) Pacific Brant found in southwest Alaska were

[26] Phillips, L. M., A. N. Powell, and E. Rexstad. 2006. Large-scale movements and habitat characteristics of King Eiders throughout the nonbreeding period. Condor 108:887–900.

[27] BirdLife International. 2012. Species factsheet: *Melanitta americana*. Downloaded from http://www.birdlife.org on 13/07/2012.

[28] USFWS. 2005. Black Scoter studies in Alaska. Available from: http://seaduckjv.org/meetseaduck/blackscoter_study_outreach_web.pdf.

[29] Kirchhoff, M.D. 2010. Audubon Alaska WatchList 2010: Highlighting declining and vulnerable bird species in Alaska. Audubon Alaska, Anchorage.

[30] Larned, W. W. 2012. Steller's eider spring migration surveys, Southwest Alaska, 2011. United States Fish and Wildlife Service Report, Anchorage, Alaska.

[31] Stehn et al. 2006. Monitoring Black Scoter populations in Alaska, 2005. Unpubl. USFWS report, Anchorage, AK

[32] *Ibid.*

[33] *Ibid* 30.

[34] BirdLife International. 2012. Species factsheet: *Branta bernicla*. Downloaded from http://www.birdlife.org on 14/07/2012.

[35] *Ibid.* 29.

[36] *Ibid*. 30.

[37] Stehn et al. 2011. Monitoring the nesting population of Pacific black brant. Report to the Pacific Flyway Study Committee. Anchorage.

	High count – 81,743 (May 1992) 1992-2012 mean – 50,245		counted at Izembek Lagoon. Up to 150,000 Pacific Brant use the globally significant Izembek-Moffet Lagoon IBA.
Emperor Goose	The population is now estimated at 78,000 with 100% living in Alaska—primarily breeding on the Yukon-Kuskokwim Delta and staging along the Alaska Peninsula. Southwest Alaska[39] High count – 53,926 (April 1998) 1992-2012 mean – 36,368	IUCN Red List near threatened species, Audubon WatchList species of concern due to ~50% global population reduction during the last 50 years; in Alaska, the population declined from 139,000 in 1964 to 42,000 in 1986[40] . Currently, fall counts on the Alaska Peninsula show a 0.2% per year increase[41] .	**The entire world's population of Emperor Goose migrates through Izembek Refuge each spring and fall**[42] . More than 20% of the Emperor Goose population overwinters in Izembek and Kinzarof Lagoons. Key late-September sites include Cinder River Estuary 12,844 (21.4%), Seal Islands 20,834 (34.8%), and Nelson Lagoon & adjacent estuaries 14,256 (23.8%)[43]. In late April, over 70% of the Emperor Geese found between Nelson Lagoon and Port Heiden; about 4% from Egegik Bay to Nanvak Bay[44].
Black-legged Kittiwake	Globally about 17,000,000 to 18,000,000 individuals[45]. The Pacific subspecies of Black-legged Kittiwake is about 2.6 million birds, of which 50% are estimated to live in Alaska[46].	Overall the population trend for Black-legged Kittiwake is decreasing in North America (based on Breeding Bird Survey and Christmas Bird Count data), although populations are stable elsewhere[47] ; In Bristol Bay, the Cape Peirce colony has declined by	**One of the largest colonies in Alaska occurs at Cape Newenham** in northern Bristol Bay. About 214,000 Black-legged Kittiwakes breed at two globally significant IBAs located in northern Bristol Bay: Cape Peirce & Cape Newenham Colonies, Round Island

[38] Pacific Flyway Council 2002. Pacific Flyway management plan for Pacific brant. Pacific Flyway Study Comm. [c/o USFWS, DMBM] Portland, OR.

[39] Larned, W. W. 2012. Steller's eider spring migration surveys, Southwest Alaska, 2011. United States Fish and Wildlife Service Report, Anchorage, Alaska.

[40] Petersen et al. 1994. Emperor Goose (*Chen canagica*). In The Birds of North America, No. 97 (A. Poole and F. Gill, Eds.). Philadelphia.

[41] Malleck, E. J. and C. P. Dau. 2011. Aerial survey of emperor geese and other waterbirds in southwestern Alaska, Fall 2010. USFWS report, Anchorage, AK.

[42] http://www.fws.gov/refuges/profiles/WildHabitat.cfm?ID=74520.

[43] *Ibid.*

[44] Dau, C. P. and E. J. Malleck. 2011. Aerial survey of Emperor Geese and other waterbirds in southwestern Alaska, Spring 2010. USFWS report, Anchorage, AK.

[45] BirdLife International. 2012. Species factsheet: *Rissa tridactyla*. Downloaded from http://www.birdlife.org on 16/07/2012.

[46] Denlinger, L. M. 2006. Alaska Seabird Information Series. Unpubl. report, USFWS, Migratory Bird Management, Anchorage, AK.

[47] *Ibid.* 45.

		6.4% per year since the 1990s[48].	Colony, and Hegemeister Island Colonies. These three sites account for about 10% of the global population. They also forage at two globally significant pelagic IBAs: Izembek Refuge Marine and Ilnik Marine.
other seabirds			Overall, breeding seabirds at seven globally significant colonies in the Bristol Bay region **number over 1.2 million birds** including over 80,000 Horned Puffins and **over 800,000 murres** (most, if not all, Common Murres)[49] [50].
Bar-tailed Godwits	World Population: about 1,100,000 to 1,200,000 individuals[51], of which 90,000-100,000 breed in Alaska[52] [53].	Audubon WatchList species. In Alaska, appear to be declining[54] in part due to habitat degradation outside of Alaska such as in the Yellow Sea[55].	**Over one-third of Alaska breeding population may stage at Egegik Bay** prior to migrating to new Zealand/Australia wintering areas[56]. Between 3,000 to 10,000 godwits have been observed at IBAs including Cinder Lagoon, Port Heiden, and Nelson Lagoon/Mud Bay.
other shorebirds			Sites potentially of **hemispheric importance**

[48] Denlinger, L. M. 2006. Alaska Seabird Information Series. Unpubl. report, USFWS, Migratory Bird Management, Anchorage, AK.

[49] Smith, M., N. Walker, C. Free, M. Kirchhoff, N. Warnock, A. Weinstein, T. Distler, and I. Stenhouse 2012. A Standardized method for identifying marine Important Bird Areas using colony and at-sea survey data in Alaska. Audubon Alaska, Anchorage.

[50] Seabird Information Network. 2011. North Pacific Seabird Data Portal. Available at http://axiom.seabirds.net/maps/north-pacific-seabirds/. Consulted in October 2011.

[51] BirdLife International. 2012. Species fact sheet: *Limosa lapponica*. Downloaded from http://www.birdlife.org on 16/07/2012.

[52] Morrison et al. 2006. Population estimates of North American shorebirds, 2006. Wader Study Group Bull. 111: 67–85.

[53] Alaska Shorebird Group. 2008. Alaska Shorebird Conservation Plan, ver. 2. Alaska Shorebird Group, Anchorage, AK.

[54] *Ibid*. 52.

[55] Kirchhoff, M.D. 2010. Audubon Alaska WatchList 2010: Highlighting declining and vulnerable bird species in Alaska. Audubon Alaska, Anchorage.

[56] Gill, R. and B. McCaffery. 1999. Bar-tailed Godwits *Limosa lapponica* in Alaska: a population estimate from the staging grounds. Wader Study Group Bull. 88:49-54.

			(supporting at least 30% of the biogeographic population for a species) **to migrating North American populations of shorebirds** include Izembek Lagoon for Rock Sandpipers, Nelson Lagoon/Mud Bay for Dunlin, and Cinder-Hook Lagoons and Ugashik Bay for Marbled Godwits[57].

Subsistence Values

Not only do the inter-tidal flats and waters of Bristol Bay support nationally and internationally significant numbers of birds, but the birds that use the Bristol Bay area provide important subsistence value to residents of Alaska. An estimated annual average of 37,500 birds was taken for subsistence use in Bristol Bay between 2001 and 2005. Of the total harvest, 16,100 birds (mainly ducks [43%] and geese [20%]) were taken. Converted to usable weights, the subsistence harvest of birds provided an average of 75,000 pounds of meat annually to Bristol Bay residents between 2001 and 2005. By weight, the subsistence harvest provided about 30 pounds of meat per household[58].

Conclusion

As the EPA draft "Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska" has indicated, open-pit mining is fraught with uncertainty. Especially disturbing is the fact that "The promises of today's mine developers may not be carried through by future generations of operators whose sole obligation is to the shareholders of their time." (EPA 2012, section 8.6 Summary of Uncertainties in Mine Design and Operation). One only has to look at the history of mines like the Summitville Gold Mine in Colorado[59] to see how quickly these uncertainties can lead to environmental disasters where the public and environment end up paying.

Large-scale, open-pit mining operations at the headwaters of sensitive areas like Bristol Bay have probabilities for disaster that are not worth their enormous environmental risk. Worldwide, out of more than 3500 tailings dams, an estimated one tailings dam fails every eight months[60]. A mining disaster like the collapse of a tailings pond dam in the upper reaches of Bristol Bay (like what has been proposed at the Pebble Mine site), would not only affect the salmon and rivers of the Bristol Bay drainage but very likely the marine waters and resources of Bristol Bay. This could result in significant, far-reaching negative impacts on many of the

[57] Alaska Shorebird Group. 2008. Alaska Shorebird Conservation Plan, ver. 2. Alaska Shorebird Group, Anchorage, AK.

[58] Wentworth, C. 2005. Subsistence migratory bird harvest survey, Bristol Bay 2001-2005 with 1995-2005 Species Tables. U.S. Fish and Wildlife Service, Migratory Birds and State Programs, Anchorage, AK.

[59] http://www.cdphe.state.co.us/hm/summitville.htm.

[60] Chambers, D. M. and B. Higman. 2011. Long-term risks of tailings dam failure. Center for Science in Public Participation, 224 North Church Avenue, Bozeman, MT.

waterbirds that concentrate in the Bristol Bay region. The marine food-web of Bristol Bay depends in part on the nutrients that salmon provide when they spawn and die in Bristol Bay rivers. Like other ecologically important areas within Alaska (for instance, the Tongass National Forest), salmon are a vital link to the health of the surrounding ecosystems[61]. Trees in the Tongass depend on salmon, and millions of birds in Bristol Bay depend on salmon as well. Even if the potential risks of failure are small, over perpetuity, dams will fail and the potential ecological costs of disrupting the rich food web of the Bristol Bay region are too great. Large-scale open-pit mines should not be part of the Bristol Bay landscape.

We respectfully request that the EPA, as it finalizes the draft Assessment, continue to proactively protect the Bristol Bay region from development of massive open-pit mining projects, including the proposed Pebble Mine. Alaska's clean waters and air, salmon populations, and globally important populations of birds depend on this protection, as do the citizens of Alaska.

Thank you again for providing this opportunity for comment.

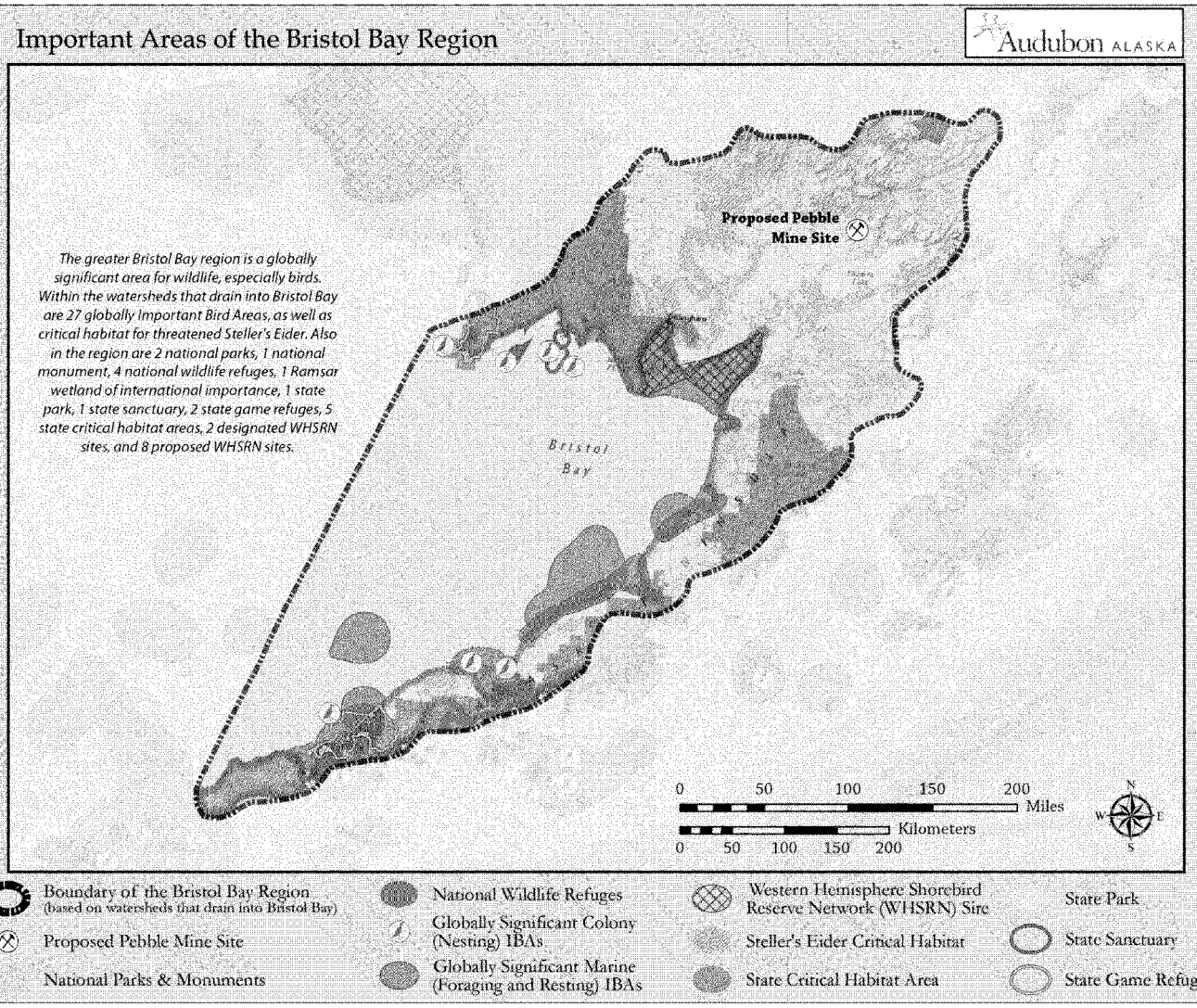
Sincerely,

Nils Warnock, Ph.D., Executive Director

[61] Wipfli, M. S. & C. V. Baxter. 2010. Linking ecosystems, food webs, and fish production: subsidies in salmonid watersheds. Fisheries 35:373-387.

Important Areas of the Bristol Bay Region

Audubon ALASKA



The greater Bristol Bay region is a globally significant area for wildlife, especially birds. Within the watersheds that drain into Bristol Bay are 27 globally important Bird Areas, as well as critical habitat for threatened Steller's Eider. Also in the region are 2 national parks, 1 national monument, 4 national wildlife refuges, 1 Ramsar wetland of international importance, 1 state park, 1 state sanctuary, 2 state game refuges, 5 state critical habitat areas, 2 designated WHSRN sites, and 8 proposed WHSRN sites.

- Boundary of the Bristol Bay Region (based on watersheds that drain into Bristol Bay)
- Proposed Pebble Mine Site
- National Parks & Monuments
- National Wildlife Refuges
- Globally Significant Colony (Nesting) IBAs
- Globally Significant Marine (Foraging and Resting) IBAs
- Western Hemisphere Shorebird Reserve Network (WHSRN) Site
- Steller's Eider Critical Habitat
- State Critical Habitat Area
- State Park
- State Sanctuary
- State Game Refuge